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The new traction problem

[New York]

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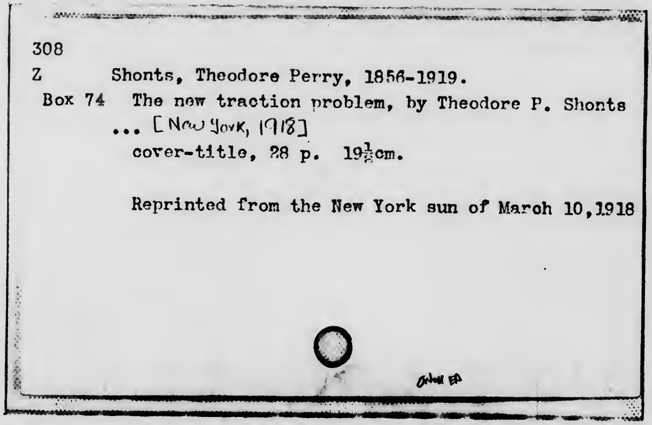

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BY

THEODORE P. SHONTS

President of

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7 April, 1920 - C. R. W

The New Traction Problem

By Theodore P. Shonts

President of the Interborough Rapid Transit Company

THE local transit problem of the past has been largely an engineering problem.

The problem of the future is newer and bigger. It is a sociological problem, the problem growing out of increasing congestion due to rapid growth of urban populations.

CONGESTION INCREASING

New York, in its Dual System contracts, has already taken the lead in dealing with this problem. But it has only begun. Not only is the problem big, it is immediate and pressing. It is a portentous fact that *no increase of transit facilities, no matter how great, has ever permanently relieved congestion.* Congestion, in fact, has increased.

Our experience in New York, not only in the first subway but in that vast network of lines known as the "Dual System," has met and conquered nearly every conceivable problem of a purely engineering sort. The Dual System represents in addition an effort to meet problems that are sociological in nature; and to meet sociological demands it necessarily comprises a financial scheme wholly new in the history of urban transit work in America.

THE DUAL SYSTEM

The Dual System is so called because two large companies, the Interborough Rapid Transit and the Brooklyn Rapid Transit Companies, were enlisted with the city itself as part owner and sharer of profits. The Dual System will, when completed, comprise more than 600 miles of line.

The first subway consists of about seventy-three miles of track. The Dual System will include not only the first subway but all the subways and elevated lines in all the city's boroughs. It will comprise about 618 miles of track. It should be in full operation next year.

The Interborough Rapid Transit Company will operate 358 miles and the New York Municipal Railway Corporation (Brooklyn Rapid Transit) will operate 260 miles.

EXTENT OF THE DUAL SYSTEM

The Dual System will not only more than double the elevated and subway mileage existing before the new contracts were undertaken, but it will increase transportation facilities more than threefold. It is the greatest engineering project of the kind ever undertaken and will have cost upward of $400,000,000, or more than the Panama Canal.

It will be able to carry more than three billion passengers a year. While it does not comprise the "McAdoo tubes" nor the Pennsylvania tunnel to New Jersey, it will furnish outlets for these lines. Richmond Borough (Staten Island) will be the only borough not immediately furnished with new subways or elevated lines, but a tunnel under the Narrows to the island from South Brooklyn is in the plans and eventually will be built. The riders on the municipal ferries from Staten Island will transfer without extra fare to the New York Railway's surface lines in Manhattan.

In time the Dual System will revert completely to city ownership.

THE SOCIOLOGICAL SIDE

With this brief word as to its purely physical aspects, let us glance at the sociological and financial sides, for they are intimately related.

Years ago, in 1894, to be exact, the people, by referendum vote, decided in favor of a policy of municipalization of its rapid transit system. The old Rapid Transit Commission and its successor, the Public Service Commission, ever since the appointment of the latter body in 1907, have been working out that policy of municipal partnership. I need not go into the many problems that have had to be met. But that the situation may be understood I must consider for a moment some aspects of the relationship of transit companies and municipalities as a broad topic.

In the beginning of modern street transit facilities came the horse car. The lines were short, cars were inexpensive, labor was cheap and fares were generally five cents. The horse car lines were almost invariably profitable.

Hardly any business has been so rapid in its evolution as the street railway business. Cable cars were rapidly succeeded by overhead and underground electric trolley cars, elevated lines and subways.

WHAT INVENTION DID

When invention really laid hold of it improvements in the transportation field came so thick and fast that long before new cars, new electric apparatus, new power houses, etc., were worn out they were out of style and obsolete. In Denver, for instance, a complete cable car system was scrapped and electric lines put in its place before the cable lines were a year old.

An era of franchise restrictions set in. Franchises were limited in duration. Franchise taxes were levied, as were car licenses, paving taxes, snow removal charges, percentages of gross receipts, free transfers and the like. All, of course, had to come out of the fare payers.

Of late years, particularly since the opening of the war, the rising costs of taxation, labor and materials have been so rapid, so huge that the electric railway company that is paying nowadays is the rare exception. In all New York State not one-half the companies are able to meet their fixed charges. Some are not even earning their operating expenses. Few are paying any dividends whatever and none as much as the law entitles public utilities to as a "fair return." They are carrying more passengers, but are making less money.

THE SECRET OF IT ALL

It is the same all over the country. The secret of it all is this and nothing more: *Fixed fare and rising costs.*

So everywhere the companies are looking for greater income or reduction of taxes. They must have these things or go into bankruptcy. Several companies

have junked their lines and quit business. Never but once (1915) has the mileage of electric railways going into receivership been so great as in 1917.

It was one thing to carry a horse car passenger a couple of miles for five cents. It is quite another, either on longer lines or by the use of transfers, and with enormously more expensive plant, to carry a passenger five, ten or fifteen miles for five cents. Yet that's what the growth of cities makes necessary. Nothing has developed our municipalities more than their street cars.

THE BROAD PROBLEM

It is desirable that the workingman and all others be able to go away from the busy centers of industry to more wholesome home surroundings in the outlying districts. There children can have more favorable surroundings and family life in something like its true American form. Again, the development of the outlying districts raises values in a way that gives the city higher income from taxation. These are important sociological reasons behind the Dual System plan.

No matter under what system a transit line be organized, the basic, unchangeable fact is that the cost of the service can possibly come from only two sources. Either the fare payer must pay it or the taxpayer must pay it. It cannot permanently be saddled on to investors. In low fare cities the inhabitants pay the costs just as they do in high fare cities. But they pay in different ways.

TRACTION BUILDERS

Transit systems are built and operated not with the money of single owners but with the money of many investors. Investors either take stock for a share of the dividends or they loan money on bonds for sake of the interest. If the street railway business doesn't pay and promises not to pay investors will not invest. In that case extensions and new lines cannot be built.

The street railroads, in short, now find themselves in similar position to the steam railroads. The latter were not allowed to raise freight rates and couldn't get the money to keep up with the country's needs in new cars, engines, tracks and terminals.

New York City frankly recognized and assumed its share of the financial risk involved in a five-cent fare, because it wanted the social benefits arising from the limited five-cent fare, and went into partnership with the two big companies in the Dual System contracts. It put up part of the money to build this system and the companies put up part.

As the companies threw into the system their existing elevated roads, subways and plant, it was arranged that out of the pooled proceeds the companies should get a preferential payment equal to the profits they were already making.

THE DUAL PLAN

But after the preferential payments and certain payments to the city, the city and the companies divide the remaining profits. Only if there be a deficit must the city decide whether it will meet it by taxation or charge higher fares.

That, in brief, is the fundamental philosophy back of the Dual System contracts, and it is based on the sociological demands of the time and as a way to escape the congestion that is crowding so rapidly upon New York through its astonishing growth.

It is a new policy and it may point a way toward meeting future problems of companies not protected by anything like the Dual System contracts. For incidentally the ultimate financial success of the scheme to the city is assured. The city will not only profit handsomely from the operation of the Dual System, but in time—the contracts run for forty-nine years—the system will have been paid for ("amortized") out of earnings and will become without further payment the property of the municipality.

OTHER GAINS FOR THE CITY

But the fact of profitableness hinges upon another, the fact of rapidly growing population. This, again, causes a rapidly increasing congestion. And that is a fact full of sociological import.

It is the biggest problem before us, for, curiously enough, increased facilities do not meet it—and never have met it. *Congestion has increased as facilities have increased.*

The problem is not a new one. Like the poor, it is always with us, or has been for half a century at least.

Some of the comments of the press of the old days are both amusing and instructive, for the problem of congestion existed away back in the fifties and sixties.

THE FIRST ELEVATED

When the first elevated road was built—it was begun in 1869—the end of traffic congestion was believed to be near. But by 1871 the elevated had virtually been abandoned as a promise of relief. The *Railroad Gazette* of February 17, 1872, said:

> "That the city of New York is sorely in need of greater facilities is a fact which is painfully impressed upon us all."

On November 16, 1877, the *Railroad Gazette* said apropos of the newly projected elevated roads which promised to settle the traffic problem:

> "Where so recently there was no means of travelling from Wall Street to Central Park faster than horses could travel, there seem likely to be in a few months three

> steam railroads, all within a belt a mile wide. The question will then no longer be how people can get up and down in the city, but how the three railroads can get traffic enough to support them."

Within less than seven months from that date the Sixth Avenue line was opened, and this was the result of the promised relief from congestion, as commented upon by the *Railroad Gazette:*

> "Most notable of all, perhaps, was the amount of traffic, the trains appearing to be generally filled at some point of their run, and that not only in the morning and evening but also in the middle of the day. Indeed, about noon many were standing in the cars."

BACK IN 1887

Longer and longer trains were put on. They were run more and more frequently, until, in fact, no more trains could be run. Yet in 1887 the *Railroad Gazette* said:

> "The chronic overcrowding of the elevated has lately called forth some indignant protests from the daily press."

About a year ago the Interborough Company called the attention of the public to the peculiar nature of the problem by publishing these significant figures:

THE INCREASE OF TRAFFIC INTENSITY

Year	*Facility*	*Total rides*	*Rides per inhabitant*
1872	Horse cars................	138,722,196	147
1882	Street cars, elevated road, local only..............	250,510,832	215
1906	Street cars, elevated, subway, first year...............	836,661,206	298
1916	Street cars, elevated, local and express, subway.....	1,201,067,709	332

The points to be observed from this table are:

1. The old facilities always carried just as many persons as ever—after possibly a brief let-up.
2. The new lines developed new traffic, and
3. The "riding habit" increased so that people ride oftener than ever.

THE PROBLEM GROWS

Each year the problem of handling the millions of New York traffic grows increasingly difficult. The struggle is hard, not to anticipate the city's future needs, but merely to keep up with the present.

TRANSIT FACILITIES NEVER "CATCH UP"

Extensions of transit facilities, no matter how rapid, do not seem to be able to keep pace with crowds and congestions.

Public Service Commissioner Travis H. Whitney estimates that city traffic is increasing at the rate of more than 100,000,000 annually.

Whether this tendency will persist one cannot say, but the very fact of *improved transit facilities in New York seems to be one of the factors causing added growth of the city.* We seem to be working in a circle: (1), added facilities; (2), more population, and (3), more congestion.

It used to be considered that this was mainly due to the fact that the traffic on Manhattan Island was mainly north and south. But the additional facilities to New Jersey and Long Island have not solved the problem.

The operation of the new subway lines has now gone far enough to reveal the actual figures of a remarkable and rapid

growth of travel, and indications of an amazingly increased riding habit, bearing out the theory and expectations based upon it.

I would not be at all surprised if in ten years from now New York would be building still further additions to the vast network of new rapid transit lines that are now nearing completion. *The congestion in the subway in ten years from now will, I believe, be far greater than it is to-day.*

INCREASE BEYOND ALL EXPECTATION

The first subway, built to carry 400,000 passengers a day, was carrying at the end of its first year a daily average of 422,592 persons. It is now carrying an average of more than a million and a quarter.

But wonderful as that record is, look at the record of the new Queensboro subway:

Month	*Passengers*
July, 1915	**130,894**
December, 1915	**265,323**
December, 1916	**608,828**
September, 1917	**1,301,684**

This record for growth far surpasses the similar record in the first subway. Compare them:

ORIGINAL SUBWAY

First month (November, 1904)	6,150,917
Twenty-seven months later	15,961,984

Increase of 159 per cent.

QUEENSBORO SUBWAY

First month (July, 1915)	130,894
Twenty-seven months later	1,301,684

Increase of 886 per cent.

The traffic growth on the first subway was considered phenomenal, but the ratio of increase in the Queensboro subway for a corresponding period was *nearly six times as great.*

80% GROWTH IN SIX MONTHS

The White Plains extension of the subway, was opened March 3, 1917. It carried 179,142 passengers the first month. In September, six months later, 310,342 passengers were carried, an increase of about 80 per cent.

The Jerome avenue line was opened June 2, 1917, and it carried in that month 168,150 passengers. In September, only three months later, 247,970 passengers were carried, an increase of about 48 per cent.

On June 3rd that part of the Seventh Avenue line operating between Times Square and the Pennsylvania Station opened. It was a mere shuttle service. In June it accommodated 99,636 passengers. Three months later it carried 252,255 passengers, an increase of about 153 per cent.

In an article entitled "The Water Barriers of New York City," printed in September, 1916, in the *Geographical Review*, published by the American Geographical Society, Ellsworth Huntington most interestingly brings out the tremendous cost, both economic and social, that the water barriers surrounding the island of Manhattan bring.

THE CITY'S WATER BARRIERS

Because the island has a water barrier to travel on the west of the Hudson River, on the east of the East River, on the north of the Harlem River, we have been forced through the years to expend unnumbered billions getting across these natural water barriers. By rowboat and sailboat and ferryboat, by bridge and by tunnel, we have done it. But the cost has run into staggering figures.

The writer points out the enormous land values of Manhattan Island and attributes a large part of that high valuation and resultant high rents to the constriction of Manhattan by its natural water barriers. To their influence he attributes the development of the sky scraper, which in turn adds to the congestion of the lower city to such a marked degree. He says:

"Every day over 750,000 people swarm into the region below Twenty-third Street by subway, tube, bridge and ferry and still others by surface cars and on foot. Such crowding has a bad effect on both health and character. When 15,000 people pour out from a single building in an hour and when hundreds of thousands pour out of other buildings within the space of a few hundred acres, the congestion is enormous.

"How many people of every kind have suffered a nervous shock because of the

daily rush? How many have taken cold or become sick because they have been over-tired and have breathed polluted air while wearily hanging on to a strap and swinging and jolting from side to side? Because of such conditions how many are to-day less efficient than they might have been? How many have yielded to temptation in one form or another simply because the nervous wear and tear of the terrible congestion of lower New York has decreased their vitality?

"All of these are things we must take into account if we would know what the water barriers are doing to the great American metropolis."

GROWTH OF CITIES

In the same journal (March, 1917) Sidney A. Reeve, an engineer, formerly Professor of Hydraulics and Steam Engineering at Worcester Polytechnic Institute, takes up the same question, but arrives at a different explanation of the phenomenon of congestion. He gives this interesting and significant table taken from figures in the United States census reports:

GROWTH OF AMERICAN CITIES
(Communities of 10,000 inhabitants or over)

	Percentage of population living in cities	*Number of such cities*	*Average size of such cities*
1850...........	12.2	66	42,900
1860...........	15.0	86	54,900
1870...........	19.7	151	50,300
1880...........	11.5	201	53,600
1890...........	28.0	340	51,900
1900...........	34.6	394	67,000
1910...........	40.1	568	65,000

He says on congestion in cities, which has been the outstanding fact of all our census reports: "It is one of the most alarming symptoms of recent social evolution that the people are ceasing to inhabit the country. The resultant deficit in the food supply on the one hand, the unwholesome crowding of slums and apartments in the larger cities and factory towns on the other are rapidly becoming a real menace to public health and social stability. There are plenty of statistics published as to this. The question is not: Does congestion exist? It is instead: What are its causes and its cure?"

Briefly, the writer holds the major cause to be the growth of "commercialism"; that is, the fact that more and more persons are making their living in buying and selling of things rather than in producing things, and the consequent need of gathering into cities for purposes of trade. He says:

BUSINESS CROWDS THE CITIES

"The great forces of commercialism are packing people into the cities just as densely as life can exist there. Any extension of transit facilities permits additional congestion. Instead of relieving it, it makes it worse. The whole history of rapid transit and congestion corroborates this fact.

"New York City is housing some 500 new inhabitants each night, because, on the average, her transit facilities are expanding at a rate to care for this rate of growth in congestion. Her existing subway, with express trains 700 feet long, running every two minutes, and locals 500 feet long every three minutes, is the most intense passenger carrier in the world. Yet the existing subway system is but a bagatelle compared with that now under construction. What will be the degree of congestion as a result of its operation can only be conjectured!

"Congestion is not due to whim. Population gravitates whither it can make the best, the easiest and the most certain living. The fact that all over the world, under every form of government or diversity of climate, if only commercialism has penetrated there, people are flocking from the country to the city should prove that it is not a matter of whim.

"If there were a fixed value of population in the city, of course increased facilities for circulation would relieve crowding. But there is no limit to city populations except the ability to get about profitably."

On May 26, 1907, the *New York Herald* printed a symposium of views on the problem of congestion to which the writer contributed. George S. Rice, then Chief Engineer of the Rapid Transit Commission, said in that discussion:

> "The growth of New York is inevitable. It will soon be the largest city in the world. . . . It is one of the paradoxes of our work that as we increase the facilities of transportation we add to its volume in a surprising ratio. In a sense we are working in a circle. As quickly as it becomes possible to ride about the city at an increased rate of speed and with the opening up of new lines of transit, business increases, population is attracted to the city and the problem is vastly complicated."

THE FACTS MUST BE FACED

No one contends, of course, that the problem will be solved by ceasing to add to our transit facilities. We must meet the needs as rapidly as possible. And it is, of course, true that *if population stood still* we could in time catch up to its wants. But we must recognize the fact that the enormous concentration of population in our cities is the real source of the trouble.

The problem does not exist because of the selfishness of transit corporations. It is due to causes quite beyond their control and transit companies have done their best to solve it. *Yet no complaint* *against transit companies is so general, nor so unreasoning, as the complaint that their cars are crowded, that not every passenger can have a seat.*

NEW YORK'S CROWDED STREETS

Congestion of New York's streets long ago attained an intensity that is nothing less than calamitous for the surface cars. Their average speed is growing lower and lower, largely because of congested streets and blocking of the street railroad tracks by trucks and automobiles, not to mention frequent stops due not to the need of letting passengers on and off but to let crowds pass across the streets at corners.

Few people realize that it costs money to start and stop a street car. Each unnecessary stop results in needless delay to the passengers already on the car, in waste of electric energy, in wear and tear upon the equipment and in more opportunities for platform accidents.

Never have New York's streets been so blocked with building operations, subway construction, sewer and water main excavations, repaving, etc., as in the last two years.

In Cleveland, for instance, the average speed of the street cars—the highest in the United States—is nearly eleven miles an hour. In New York's congested zone it is less than six miles an hour.

IN CLEVELAND

Cleveland's street cars are filled and they can carry twice as many people a day in a car as we can here in New York. Then, too, this low speed prevents people from using the cars. Often they can get from one point to another as rapidly by walking. *Clearly there is no selfish interest served by such congestion.* The number of people riding in the street cars in 1917 was a great deal under the number using them in 1916.

New York is not the only city that has this problem. It exists in every great commercial city of the world. It makes no difference whether the transit lines be privately owned, publicly owned, or whether the system be owned in a municipal partnership, as in the Dual System of New York.

A MISTAKEN COMPLAINT

Whatever be the ultimate solution it is necessary first of all to realize that the popular complaint is not aimed at the *fundamental cause* of the trouble.

And for the immediate present it will help, if in the uncomfortable conditions involved in subway riding at the present, we do not overlook the ordinary manifestations of thoughtfulness that help make trying conditions more endurable. Certainly the Interborough Rapid Transit Company will overlook no method, avoid no expense, that will make not only for the safety of its passengers but for their comfort.

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